WE CLAIM:

1. Genetically engineered viable yeast cells transformed with plasmids expressing the Ah receptor protein, the Ah receptor nuclear translocator, the dioxin responsive element and a reporter gene, wherein the reporter gene detects the activation of the Ah receptor upon the binding of agonists to the Ah receptor.

2. The yeast cells of claim 1 wherein said yeast cells are selected from the group consisting of *Saccharomyes cerevisiae* and *Saccharomyces pombe*.

3. The plasmid containing yeast cells and clone thereof of claim 1 deposited under ATCC No. _____.

4. The yeast cells of claim 1 wherein the reporter gene is lac Z.

5. Genetically engineered viable yeast cells transformed with plasmids expressing a chimeric Ah receptor, said chimeric Ah receptor comprising the Ah receptor having its binding in dimerization domains replaced with the analogous domain from a protein capable of binding DNA sequences, an operator sequence comprising the binding sites from the binding domain of the protein used to replace the binding domain of the Ah receptor, and a reporter gene for detecting the activation of the chimeric Ah receptor upon the binding of agonists to said chimeric Ah receptor.

6. The cells of claim 5 wherein the yeast cells are selected from the group consisting of *Saccharomyes cerevisiae* and *Saccharomyces pombe*.

7. The plasmid containing yeast cells and clones thereof in claim 5 deposited under ATCC No. _____.

8. The yeast cells of claim 5 wherein the binding and dimerization domain of the Ah receptors are replaced with the binding and dimerization domain from a LexA protein.

9. The yeast cells of claim 5 wherein the operator is LexA operator.

10. The yeast cells of claim 5 wherein the reporter gene is a lac Z.

11. Genetically engineered viable mammalian cells transformed with plasmids expressing a chimeric Ah receptor, said chimeric Ah receptor comprising the Ah receptor having its binding in dimerization domains replaced with the analogous domain from a protein capable of binding DNA sequences, an operator sequence comprising the binding sites from the binding domain of the protein used to replace the binding domain of the Ah receptor, and a reporter gene for detecting the activation of the chimeric Ah receptor upon the binding of agonists to said chimeric Ah receptor.

12. The mammalian cells of claim 11 wherein the mammalian cells are COS-1 cells.

13. The plasmid containing mammalian cells and clones thereof of claim 11 deposited under ATCC No. _____.

14. The yeast cells of claim 11 wherein the binding and dimerization domain of the Ah receptors are replaced with the

binding and dimerization domain from a Gal4 protein.

15. An assay for detecting agonists to the Ah recptor in environmental samples, the assay comprising the steps of:

a) preparing a culture of the genetically engineered viable cells of claims 1, 5, or 11;

b) incorporating a sample to be tested into the culture containing the cells of step 1;

c) growing the culture for several hours;

d) determining Ah receptor activation by detecting reporter gene expression; and

e) detecting agonists based on Ah receptor activation.

16. The assay of claim 15 wherein the cells are yeast cells.

17. The assay of claim 15 wherein the cells are mammalian cells.

18. The assay of claim 15 wherein the environmental sample is a water sample.

19. The assay of claim 15 wherein the environmental sample is a air sample.

20. The assay of claim 15 wherein the environmental sample is a soil sample.